



# **C5-6 develops and markets enzymes to the bio-refining and biofuels industries**

- **Spun out from Lucigen Corporation-**
  - All technology and molecules transferred under a no-charge license arrangement
- **Platform technology = \$6 M Grants**
  - Discovery tools = 8 years, \$4.5 M
  - Biofuels enzymes = 3 years, \$1.5 M
- **\$2 M new grants and loans for C5-6**

## **C5-6 has solved one of the fundamental problems in enzyme discovery.**

- **The entire \$25B enzyme market is based on material generated from less than 1% of the world's microbes**
- **The remaining 99% cannot be grown in the lab**

**Unique Cloning Tools  
Single Cell Genomics**



**Platform Technology**



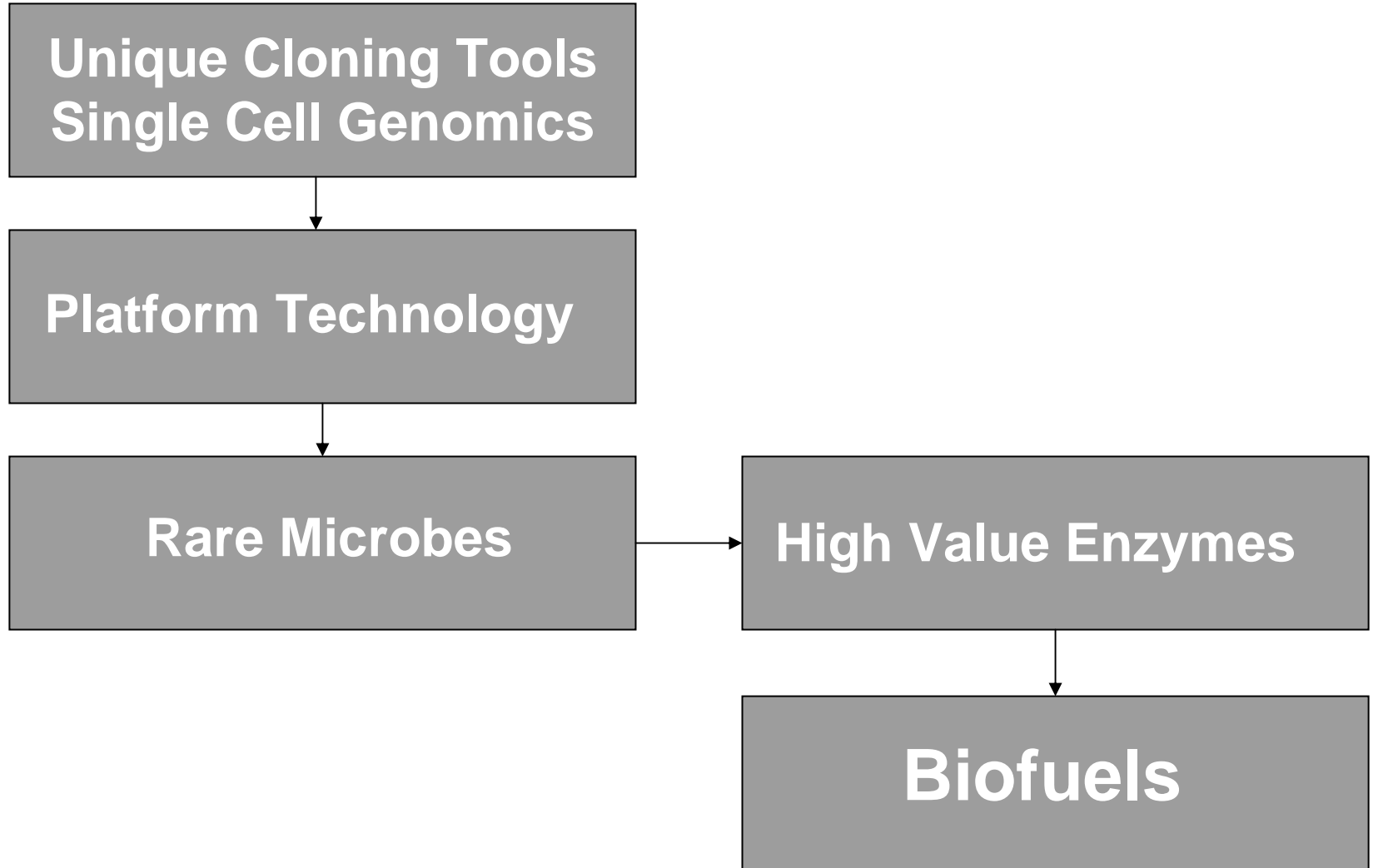
**Rare Microbes**



**High Value Enzymes**



**Biofuels**



## **C5-6 has the ability to find and produce new enzymes with targeted attributes**

- **Developing enzymes to fit the process rather than a process to fit the enzyme**
- **Bioethanol process = 80°C, pH 5-6; requiring thermostable enzymes with specific characteristics**

## Target customer = Dry Mill Producers

	2005	2012
Production (Gal. B's)	3	7.5 (mandated) 12.0 (projected)
Facilities on-line	100	

## C5-6 Opportunity

Number of Plants	Now	2012	Value	Total 2012
Corn	100	235	\$1.5M ea	\$340 M
Soy	0	35	\$5.0M ea	\$200 M
Other	0	35	\$3.0M ea	\$120 M
Total	100	305		\$660 M

**Total C5-6 Market Potential = \$660 M**

# 15% wasted in current process due to limitations of current enzymes

- CornBuster I™: 2-3% of starch remains bound to cellulose - successful starch release enzymes currently in ethanol plant lab trials
- CornBuster II™: 11-13% of corn is cellulose and hemicellulose - candidate cellulases in C5-6 lab testing

***CornBuster™ enzymes are process enhancements, not replacements, for current enzymes***

## **C5-6 enzymes deliver a strong value proposition for dry-mill producers**

- **+12% efficiency target = \$12M additional production** (*50 million gallon typical plant/\$2 gallon ethanol*)

**OR**

- **\$6M in corn and energy savings if plant is at capacity** (*corn @ \$2 bushel*)

***Sales value to C5-6 = \$800k--\$1.5M/year per customer***



## **C5-6's thermostable hydrolases convert soy meal carbohydrate to ethanol**

- **2+ billion gallons of ethanol possible from current soy meal production**
- **Soy market dynamics extremely favorable**

***Sales value to C5-6 = \$4--\$5M/year per customer***




**C5-6's ability to convert soy delivers high value to producers and millers in two ways:**

- **C5-6 enzymes convert zero value carbohydrates to high value ethanol**
- **Cost-effectively concentrating the protein, increasing its value**

***Current margin/bushel = \$0.80***

***New margin/bushel = \$7.20***

# C5-6 has a short product-to-market timeline

	Characterize	Lab Trials	Pilot	Scale-up Regulatory	Introduction
<b>CornBuster I</b>	<b>Complete</b>	<b>9/06</b>	<b>3/07</b>		<b>11/2007</b>
<b>CornBuster II</b>	<b>Ongoing</b>	<b>6/07</b>	<b>12/07</b>		<b>9/2008</b>
<b>SoyBuster</b>	<b>Ongoing</b>	<b>9/07</b>	<b>3/08</b>		<b>6/2009</b>

**David Mead, Ph.D. – Founder & CEO**

20 yrs biotech R&D & management; 4 patents

**John Biondi, MBA – President**

30 yrs business leadership experience; 5 start-ups

**Phil Brumm, Ph.D. – Chief Scientific Officer**

20 yrs management in industrial enzymes; 7 patents

**Rick Remeschatis, MBA, CFA, CPA, – CFO**

30 yrs private & public companies

## **Platform Technology**

- **CloneSmart® vector technology - *granted***
- ***Ex cyto* PCR amplification technology- *pending***
- **Linear Vector, Host Cells and Enzymes - *pending***
- **GC Cloning Technology – *pending***

## **Molecular Patents**

- **Viral Polymerase - *pending***
- **Novel Thermostable Cellulase - *pending***
- **Thermostable Viral Polymerase - *pending***
- **Novel Thermostable Hemicellulase - *in process***
- **Thermostable Enzymes for Soy Meal Carbohydrate Hydrolysis - *in process***

## **Process Patents**

- **Process for Freeing Entrapped Starch from Corn Fiber- *in process***
- **Process for Producing Ethanol from Soy meal - *in process***

## **Raising \$5 million**

- **Completes corn and soy developments**
- **Deploys direct sales and marketing effort**
- **Brings company to profitability**

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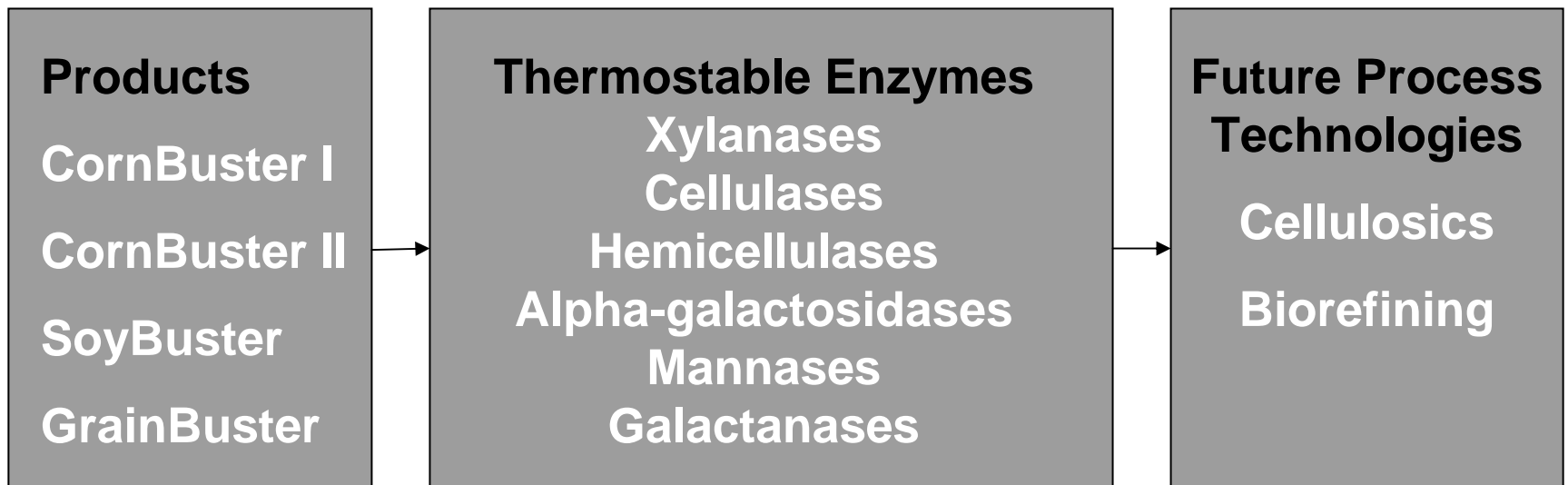
## Projected Financials and Market Penetration

	2007	2008	2009	2010	2011	2012
<b>Plants On-line</b>	180	213	238	266	285	305
<b>C5-6 Plants</b>	0	23	48	71	85	100
<b>Total Sales(000)</b>	\$0	\$2,960	\$16,850	\$43,790	\$83,400	\$145,980
<b>Cost of Sales</b>	0	1,480	8,425	21,895	41,700	72,990
<b>Op Expenses</b>	1,254	1,827	2,503	2,866	3,451	3,552
<b>Op Income</b>	(\$1,204)	(\$297)	\$5,972	\$19,079	\$38,299	\$69,488





# Enzymes for today's products bridge to tomorrow's biofuels production technologies



Existing Plant: Front-end Enzymes	Existing Plant: Down-stream Enzymes	New Process Plant Development
<b>Genencor</b> - amylases	<b>C5-6 Technologies</b> - high temperature, multi-feedstock	<b>logen</b> - cellulosics, fungal
<b>Novozymes</b> - amylases		<b>Dyadic</b> - cellulosics, fungal
		<b>Novozymes</b> - cold process, fungal
		<b>Genecor</b> - cold process, fungal

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